CLAIMS

What is claimed is:

1. An injection device for injecting liquid or semi-solid composition into a subject, the device comprising:

a hollow housing having a proximal and distal end, said distal end being configured to contain a liquid or semi-solid composition;

a hollow needle, said needle affixed to the distal end of the housing and extending longitudinally within said housing;

a plunger comprising a proximal end and a distal end, said plunger arranged to slide within the proximal end of the housing; and

a hollow sleeve slidably connected to the distal end of the housing and arranged to cover the needle prior to injection and to retract into the housing during injection;

wherein the device is designed such that when the sleeve is pressed against the subject, the sleeve retracts into the housing thereby allowing the needle to penetrate into the subject, and when the plunger is pushed into the housing, the composition is pushed from the housing through the needle and into the subject.

2. An injection device of claim 1, wherein the device is further configured such that when the composition is pushed out of the housing, the plunger moves the sleeve out of the housing to cover the needle.

3. A device of claim 1, wherein the housing contains the liquid or semi-solid composition.

4. A device of claim 3, wherein the housing contains the liquid or semi-solid composition.

5. A device of claim 1, wherein the device further comprises a releasable lock to inhibit the movement of the plunger into the housing.

6. A device of claim 1, wherein the device comprises a removable cap which covers the sleeve.

7. A device of claim 1, wherein the proximal end of the housing comprises a flange.

8. A device of claim 1, wherein the proximal end of the plunger comprises a flange.

9. An injection device for injecting liquid or semi-solid composition into a subject, the device comprising:

a hollow housing having a proximal end and a distal end;

a cartridge or tube, said cartridge or tube comprising a distal end and a proximal end, said distal end closed by a septum cap and said proximal end closed by a plunger tip slidably arranged within the cartridge or tube; and a reservoir between said septum cap and said plunger tip;

a hollow needle having a proximal end and a distal end, said needle affixed to the distal end of the housing and said proximal end of said needle extending longitudinally within said housing;

a sleeve slidably connected to the distal end of the housing and arranged to cover the needle prior to injection and to retract into the housing during injection;

wherein the device is configured such that when said cartridge or tube is inserted into said housing said septum cap forms an operable connection with said proximal end of said hollow needle, whereby when the plunger tip is urged into the cartridge or tube, the composition is urged from the cartridge or tube, through the needle and into the subject.

10. A device of claim 9, wherein the device is further configured such that when the composition is urged from the cartridge, the cartridge urges the sleeve to extend from the housing to cover the needle during and after the injection.

11. A device of claim 9, wherein the cartridge contains the liquid or semi-solid composition between the septum cap and the septum plunger.

12. A device of claim 9, wherein the device further comprises a releasable lock to inhibit the movement of the cartridge within the housing.

13. A device of claim 9 wherein said cartridge or tube further comprising a proximal compartment, a distal compartment, and a bypass, said proximal compartment and said distal compartment separated by a first septum plunger slidably arranged with the cartridge or tube.

14. A device of claim 13 wherein said proximal compartment contains a liquid component of a composition and said distal compartment contains a solid component of said composition, and wherein the device is configured such that the liquid and solid components are mixed prior to injection.

15. A device of claim 13 wherein said liquid component passes from said proximal compartment to said distal compartment through said bypass.

16. A device of claim 13, wherein said distal chamber is maintained under vacuum.

17. A device according to claim 9, wherein the distal end of the housing is an independent distal end connected to said housing prior to injection.

18. A device of claim 17 wherein the independent distal end further comprises a spring, wherein said spring urges the sleeve of said distal end to cover the needle.

19. An injection device for injecting a liquid or semisolid composition into a subject, the device comprising:

a reservoir having a proximal end and a distal end, said distal end being configured to contain a liquid or semi-solid composition;

a hollow needle, said needle affixed to the distal end of the reservoir and extending longitudinally outside said reservoir;

a plunger arranged to slide within the proximal end of the reservoir; and

a plunger housing connected to said plunger, said plunger housing configured to cover said plunger, said reservoir and said needle after injection;

wherein the device is configured such that when the plunger housing is urged around the reservoir, the plunger is urged into the reservoir, and the composition is urged from the reservoir through the needle and into the subject.

20. The device of claim 19 wherein said plunger housing is releasably connected to said plunger and wherein said plunger housing is configured to accept said the proximal end of said plunger.

21. The device of claim 20 wherein said plunger housing is fixedly attached to said proximal end of said reservoir after covering said needle.